

CLAIMS

1. An azeotropic composition consisting of 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene.
2. The azeotropic composition according to claim 1 in which a molar ratio of 1,1,1,3,3-pentafluoropropane/1,1,1-trifluoro-3-chloro-2-propene of the azeotropic composition is in the range of 64/36 to 62/38.
3. A process of separation and purification of 1,1,1,3,3-pentafluoropropane characterized by:
- subjecting a mixture which comprises at least 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene to a distillation operation; and thereby obtaining a distillate comprising an azeotropic composition consisting substantially of 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene; and
- obtaining a bottom product comprising 1,1,1,3,3-pentafluoropropane which does not substantially contain 1,1,1-trifluoro-3-chloro-2-propene.
4. A process of separation and purification of 1,1,1-trifluoro-3-chloro-2-propene characterized by:
- subjecting a mixture which comprises at least 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene to a distillation operation; and thereby

obtaining a distillate comprising an azeotropic composition consisting substantially of 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene; and

5 obtaining a bottom product comprising 1,1,1-trifluoro-3-chloro-2-propene which does not substantially contain 1,1,1,3,3-pentafluoropropane.

5. A process of separation and purification of 1,1,1,3,3-pentafluoropropane characterized by:

10 subjecting a mixture which comprises at least 1,1,1,3,3-pentafluoropropane, 1,1,1-trifluoro-3-chloro-2-propene and hydrogen fluoride to a distillation operation; and thereby

obtaining a distillate consisting substantially of hydrogen fluoride and an azeotropic composition of 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene; and

15 obtaining a bottom product comprising 1,1,1,3,3-pentafluoropropane which does not substantially contain 1,1,1-trifluoro-3-chloro-2-propene.

20 6. The process of separation and purification of 1,1,1,3,3-pentafluoropropane according to claim 5 in which the bottom product further comprises hydrogen fluoride.

7 A process of separation and purification of 1,1,1-trifluoro-3-chloro-2-propene characterized by:

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subjecting a mixture which comprises at least 1,1,1,3,3-pentafluoropropane, 1,1,1-trifluoro-3-chloro-2-propene and hydrogen fluoride to a distillation operation; and thereby

5 obtaining a distillate consisting substantially of hydrogen fluoride and an azeotropic composition of 1,1,1,3,3-pentafluoropropane and 1,1,1-trifluoro-3-chloro-2-propene; and

10 obtaining a bottom product comprising 1,1,1-trifluoro-3-chloro-2-propene which does not substantially contain 1,1,1,3,3-pentafluoropropane.

8. The process of separation and purification of 1,1,1-trifluoro-3-chloro-2-propene according to claim 7 in which the bottom product further comprises hydrogen fluoride.

15 9. The process of separation and purification according to any one of claims 3 to 8, in which the mixture which is subjected to the distillation operation is a reaction product of a fluorination of 1,1,1,3,3-pentachloropropane.

20 10. The process of separation and purification according to any one of claims 3 to 8, in which the mixture which is subjected to the distillation operation is a reaction product of a fluorination of 1,1,1-trifluoro-3-chloro-2-propene.

25 11. The process of separation and purification according to any one of claims 3 to 8, in which the mixture which is subjected to the distillation operation is a reaction product

of a fluorination of 1,1,1,3-tetrachloropropene and/or 1,1,3,3-tetrachloropropene.

12. A process for producing 1,1,1,3,3-pentafluoropropane, in which the distillate comprising the azeotropic composition of 1,1,1,3,3-pentachloropropane and 1,1,1-trifluoro-3-chloro-2-propene which is obtained by the distillation operation in any one of claims 3, 5 and 6, is recycled to a fluorination process in which 1,1,1-trifluoro-3-chloro-2-propene is involved as a feed and/or a reaction product.

13. A process for producing 1,1,1-trifluoro-3-chloro-2-propene, in which the distillate comprising the azeotropic composition of 1,1,1,3,3-pentachloropropane and 1,1,1-trifluoro-3-chloro-2-propene which is obtained by the distillation operation in any one of claims 4, 7 and 8, is recycled to a fluorination process in which 1,1,1-trifluoro-3-chloro-2-propene is involved as a reaction product.

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